

THE EARED SEALS OF SOUTH AUSTRALIA.

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The Otariid seals that inhabit the Australian coasts have been subject to much confusion in literature. There are several reasons for this, among which the following are the most important: the rather vague descriptions given by the early navigators; the hasty diagnosis of specific and generic characters on insufficient material, notably by Gray; the local use and frequent misuse of the terms Fur Seal and Hair Seal, Sea Lion and Sea Bear; the great changes which age, sex, and wetness or dryness effect in the appearance of a seal. The present paper applies particularly to the seals of South Australia, where the author has alone made first-hand observations.

Sealing as an organized industry has ceased to exist in South Australia; but there are many men still living who took part in all the old activities and brutalities of the sealing days. For these men there were two kinds of seal normally resident on the coast and islands: (i) A "Fur" seal, a small animal with an under-fur, and valuable for its pelt; (ii) A "Hair" seal, a larger animal with no under-fur when adult, and valuable only for its hide and oil.

We may say that a fur seal is an animal which when adult averages six feet for a wig (♂) and five feet for a klapmatch (♀).

The hair seal, on the other hand, is far larger: an adult bull going to ten, or even more, feet, and an adult klapmatch to an average of about eight.

What are the proper specific names for these two animals?

Péron gives the first description of the South Australian seals, and, to my mind, his account (despite the fact that his promised monograph never saw the light of day) is clear enough, even in the running account of the voyage.

His first specific naming occurs in the description of animals seen on Kangaroo Island during the stay from December, 1802, to February, 1803. The original account is as follows: "Parmi les Phocæes nombreux qui peuploient les rivages de l'île, on distinguoit surtout un nouvelle espèce du genre Otarie (*Otaria cinerea*, N.) qui parvient à la longueur de 30 à 32 décimètres (9 à 10 pieds). Le poil de cet animal est très court, très dur, très grossier; mais son cuir est épais et fort, et l'huile qu'on prépare avec sa graisse est aussi bonne qu'abondante.

"Pour l'un et l'autre rapport, la pêche de cet amphibie offriroit de précieux avantages: il en es de même de quelques autres espèces de Phocæes plus petites

qu'on trouve également en tres-grand nombre sur ces bords, et qui portent des fourrures de bonne qualites."

To Allen (1) such a description might justify Péron's *Otaria cinerea* being placed among "mythical and undeterminable species"; but only the lack of local knowledge could warrant this attitude. It is obvious that: (1) Péron's *Otaria cinerea* was a large seal nine to ten feet long; (2) that it was a hair seal; (3) that its only value lay in its leather and oil; (4) that it was different from the smaller fur seals which existed in great numbers, and which were not specifically named.

The next phase in the history of this specific name is its re-use by Quoy and Gaimard. These authors, during the voyage of the "Astralabe," examined a seal from Western Port, and identified it with *Otaria cinerea* Péron. "Comme cette espèce" (*O. cinerea*), "le même selon nous que celle qui nous occupe, a été admis dans les catalogues." They then describe an adult male seal seven feet long, and on parting the hair of which "on voit un feutre roux peu épais."

That Quoy and Gaimard's *Otaria Cendree* was an animal altogether different from Péron's *Otaria cinerea* is obvious. It is therefore difficult to see how Quoy and Gaimard's specimen, which is preserved in the Zoological Gallery of the Museum at the Jardin des Plantes, can rightly be referred to as the type of *Otaria cinerea* Péron, although Clark (10) has suggested this course.

To those familiar with the Eared Seals of South Australia it is at once apparent that Péron applied the name *Otaria cinerea* to the large hair seal of Kangaroo Island (there can, I submit, be no alternative to this suggestion), whilst Quoy and Gaimard, in error, applied Péron's name to the smaller fur seal—the animal which Péron had mentioned but had not named.

In order to unravel the nomenclature and synonymy of these animals it is best to adhere to the terminology of the old sealers, and deal first with the Hair seal and then with the Fur seal.

The Large Hair Seal, also locally termed the Cowled Seal or Counsellor Seal, in books often termed Australian Sea Lion.

By sealers the male is known as the bull and the female as the klapmatch.

(a) Péron (1) undoubtedly referred to this animal when he bestowed the name *Otaria cinerea* on the large hair seal of Kangaroo Island (Isle Deeres). Since no mention is made of the light mane or cowl in Péron's description, it seems certain that his diagnosis was made from klapmatches and young bulls only.

(b) Péron (2) also certainly gave the name *Otaria albicollis* to the same species when he saw the older bulls on St. Peter Island (Isle Eugene). His

(1) Allen, History of North American Pinnipeds, 1880, p. 215.

description is as follows: "Tous ces individus appartenoient a l'une espece nouvelle du genre particulier que j'ai cru devoir etablir sous le nom d'Otarie. Ils parviennent a la longueur de 8 a 9 pieds, et se distinguent sur-tout par une grande tache blanche a la partie moyenne et superieure du con: c'est d'apres ce caractere, que j'ai decrit ce phocace nouveau sous le nom d'Otarie Albicollis" (*Otaria albicollis* N.).

Péron contrasted their behaviour with that of other seals, and said they were "d'un naturel bien moins timide que ces derniers"; another indication that he was dealing with bulls of a species of which he had previously seen only klap-matches.

(c) Gray (3) retained the same animal as *Arctocephalus lobatus*.

(d) Quoy and Gaimard (4) redescribed a small female specimen from King George's Sound under the name *Otaria australis*, they having previously bestowed Péron's name *cinerea* on the Fur seal of Western Port in error.

(e) Peters (12) gave it as his opinion that *Otaria cinerea*, *O. lobatus*, and *O. albicollis* were synonyms; but he does not mention the *data* on which he arrived at this opinion.

With various generic designations, it was known under the specific name of *lobatus* or *lobata*, until in 1875 Clark (10) revived Péron's name *Otaria albicollis*.

In Australian zoological literature, however, the specific name *lobatus* persisted until Alexander (15) described it under the name *Eumetopias albicollis*.

Since it cannot be maintained that Péron's description of the Kangaroo Island hair seal is so vague as to leave in doubt the actual animal to which he applied the specific name *cinerea*, this name should be accepted as the designation of the species.

The Small Fur Seal, sometimes known as the Sea Bear.

By sealers the male is known as the wig and the female as the klapmatch.

(a) Péron (1) termed this species "Phocaces plus petites qui portent des fourrures de bonne qualite." He did not, however, bestow a specific name on it in the "Voyage," even if he may have done so in the lost monograph.

(b) Quoy and Gaimard (4) referred it to *Otaria cinerea* Péron in error.

(c) Gray (31) confused it with a perfectly distinct species, *Otaria forsteri* (Lesson, 1828).

(d) No other name has ever been applied to it, for Allen, Clark, and all later writers have either accepted the erroneous designation of *cinerea* Péron or confused it with *forsteri*. It is obvious, therefore, that the small fur seal of the coasts of South Australia is zoologically an unnamed species, and this being so, I propose for it the specific name of *doriferus*.

With regard to the generic designation of these species, Péron's generic title *Otaria* is generally agreed to have been created for *Otaria jubata*. Accepting *Otaria jubata* as the type of the monotypic genus *Otaria*, I see no reason to dissent from Beddard's conclusion⁽²⁾ that all the rest of the Eared Seals should be embraced in F. Cuvier's genus *Arctocephalus* (1824), of which the type is *Phoca ursina*. There are certainly no differential features of generic rank to separate *cinereus* and *doriferus*.

The synonymy is as follows (the works are referred to by numbers in the text):

Arctocephalus cinereus.

- (1) 1816. *Otaria cinerea* Péron, Voyage aux Terres Australes, ii, p. 77.
- (2) 1816. *Otaria albicollis* Péron, *op. cit. sup.*, p. 118.
- (3) 1828. *Arctocephalus lobatus* Gray, Spicilegia Zoologica, part i, p. 1, pl. iv, fig. 2.
- (4) 1830. *Otaria australis* Quoy and Gaimard, Zoologie du voyage de l'Astrolabe, i, p. 95.
- (5) 1863. *Arctocephalus lobatus* Gould, Mammals of Australia, iii, p. 49.
- (6) 1866. *Neophoca lobatus* Gray, Ann. and Mag. Nat. Hist., xviii, p. 231.
- (7) 1866. *Otaria lobata* Peters, Monatsb. Akad. Wiss. Berlin, pp. 276, 668.
- (8) 1870. *Zalophus lobatus* Allen, Bulletin, Mus. Harvard, ii, p. 31.
- (9) 1873. *Zalophus lobatus* Scott, Mammalia, Recent and Extinct, p. 21.
- (10) 1875. *Otaria albicollis* Clark, P.Z.S., pp. 650-677.
- (11) 1876. *Arctocephalus lobatus* Waterhouse, in Marcus's South Australia, p. 283.
- (12) 1877. *Otaria cinerea* Peters, Monatsb. Akad. Wiss. Berlin, pp. 565-7.
- (13) 1887. *Eumetopias cinereus* Turner, Voyage of H.M.S. Challenger, xxvi, Report on Seals, p. 79 (in part).
- (14) 1892. *Zalophus lobatus* Ogilby J. D., Cat. Aust. Mamm., p. 126.
- (15) 1920. *Eumetopias albicollis* Alexander, Journ. Linn. Soc., (Zool.), xxxiv, p. 478.
- (16) 1922. *Arctocephalus forsteri* Wood Jones, Trans. Roy. Soc., South Australia, xlv, p. 193.

Arctocephalus doriferus sp. nov.

- (17) 1816. Small Fur Seal of Kangaroo Island, Péron, *op. cit.*, p. 118.
- (18) 1830. *Otaria cinerea*, Quoy & Gaimard, Voyage de l'Astrolabe, (Zoology), i, p. 89.

(2) Beddard, Trans. Zool. Soc., xii, 1890, p. 369.

- (19) 1859. *Arctocephalus cinereus* Gray, P.Z.S., p. 358.
 (20) 1873. *Otaria cinerea*, Clark, P.Z.S., pp. 750-760.
 (21) 1884. *Otaria cinerea* Clark, *loc. cit.*, pp. 188-196.
 (22) 1874. *Euotaria cinerea* Gray, Hand List of Seals, etc., in Brit. Mus., p. 34.
 (23) 1879. *Euotaria cinerea* McCoy, Prod. Zool. Viet., Dec., iv., pl. 31, p. 7.
 (24) 1882. *Euotaria cinerea* McCoy, Prod. Zool. Viet., Dec., viii., pl. 71, p. 7.
 (25) 1887. *Eumetopias cinereus* Turner, *loc. cit.*
 (26) 1892. *Arctocephalus forsteri* Ogilby, *loc. cit.*, p. 127.
 (27) 1909. *Arctocephalus forsteri* Lucas & Le Souëf, Animals of Australia, p. 16 (with McCoy's description and figures of *Euotaria cinerea*.)

In order to clear some further uncertainties from this question, it is well to include the synonymy of the typical fur seal of New Zealand.

Arctocephalus forsteri.

- (28) 1828. *Otaria forsteri* Lesson, Diet. Class. d'Hist. Nat., xiii, p. 421.
 (29) 1829. *Phoca forsteri* Fischer, Synop. Mamm., p. 232.
 (30) 1844. *Phoca ursina* Forster, Descript. Animal., p. 64.
 (31) 1866. *Arctocephalus cinereus* Gray, Ann. Mag. Nat. Hist., xviii, p. 236.
 (32) 1866. *Arctocephalus forsteri* Gill, Proc. Essex. Instit., v, pp. 1-13.
 (33) 1872. *Arctocephalus cinereus* Hector, Trans. New Zealand Institute, iv, p. 196.
 (34) 1872. *Gypsophoca tropicalis* Gray, P.Z.S., p. 659.
 (35) 1875. *Otaria forsteri* Clark, *loc. cit. sup.*
 (36) 1909. *Arctocephalus forsteri* Waite, Subantarctic Islands of New Zealand, ii, p. 548.

The distinguishing characters of these three species are as follows :

ARCTOCEPHALUS CINEREUS Péron.

Adult male, 10 to 12 feet. Adult female, 8 to 10 feet.

Adult with coarse hair only; dark red under-fur present in pups, but shed later.

Colour. Adult Male. The entire body brown, with the exception of the large yellowish mane which extends from the crown of the head to the shoulders.

Adult Female. Brown on the dorsal surface; ventral surface pale yellowish white. Pups of both sexes brown throughout.

Nails of the three middle digits of the pes extending to the free edge of the interdigital webbing.

Prolongations of middle three digits falling far short of those of lateral digits.

Cranial characters. Adult Male. The sagittal and mehal crests are extremely well developed, and the skull is large and massive. Condyllo-basal length to 300 mm.

Adult Female. Crests not nearly so well developed. Condyllo-basal length to 250 mm.

Both Sexes. Interorbital constriction, behind supra orbital processes, relatively short, broad, and rounded. Zygomatic arch without marked post orbital processes. Posterior ends of nasals falling considerably short of posterior extremity of superior maxilla.

Dental characters. Check teeth variably $\frac{5-5}{5-5}$ or $\frac{6-6}{5-5}$ the smaller formula being most frequently met with.

With numerous small variable bosses of the cingulum, but with no regular secondary cusps.

ARCTOCEPHALUS DORIFERUS sp. nov.

Adult male, about 6 feet. Adult female, about 5 feet.

Adults with coarse hair, but a rich chestnut under-fur retained throughout life.

Colour. Adult Male. Greyish brown on the dorsal surface. Dark brown on the ventral surface.

Adult Female. Ashy-grey or yellowish brown on dorsal surface. Dark brown on ventral surface.

Pups of both sexes. Dark brown.

Nails of three middle digits of the pes fail to extend to the free edge of the interdigital webbing by considerably more than their own length.

Prolongations of middle three pedal digits practically equal to those of lateral digits.

Cranial characters. Adult Male. Crests but poorly marked, and difference between the sexes not nearly so pronounced as in *A. cinereus*.

Condyllo-basal length, adult male, to about 250 mm.

Condyllo-basal length, adult female, to about 200 mm.

Both Sexes. Interorbital constriction, behind supraorbital processes, long and narrow.

Zygomatic arch with well-developed post-orbital process. Posterior ends of nasals nearly reaching posterior margins of superior maxillae.

Dental characters. Check teeth variably $\frac{5-5}{5-5}$ or $\frac{6-6}{5-5}$ the larger formula being usually met with. With well-defined anterior and posterior secondary cusps on all except the last upper molar.

ARCTOCEPHALUS FORSTERI Lesson.

Adult male, 6 to 7 feet. Adult female, 5 to 6½ feet.

Adults with coarse hair, but a light red-brown under-fur retained throughout life.

Colour. Both sexes. Dorsal surface dark brown, grizzled by the presence of white tips to the dark hairs. Ventral surface reddish brown.

Nails of the three middle pedal digits fail to reach the free edge of the interdigital webbing by their own length.

Prolongations of middle three pedal digits not quite so long as those of lateral digits.

Cranial characters. In most gross details falls within the range of variation of *A. doriferus*.

Condylar-basal length of males and females to about 230 mm.

Dental characters. Cheek teeth normally $\frac{6-6}{5-5}$ with only an anterior secondary cusp rising from the cingulum.

Distribution of these three species.

Arctocephalus cinereus ranges from Houtman's Abrolhos in the west to the islands of Bass Straits in the east. In these islands its present existence is, according to Lord, doubtful. At one time its range extended to the mainland of Tasmania, for its bones are frequent in the kitchen middens of the aborigines. The headquarters of the species is now the islands in the Great Australian Bight.

Arctocephalus doriferus apparently ranged from the Recherche group in the west to the eastern coasts of Australia and to Tasmania. At present it appears to be confined to certain islands off Tasmania (Isle due Phoques, the Hippolytes, etc.), to the islands of Bass Straits, and to Casuarina Islands, off Kangaroo Island.

It is years since one was seen by a reliable observer on Kangaroo Island, itself, and, though it is often reported as living on the islands of the Bight, the writer has seen no living animal nor recent specimen. Moreover, no skeletal remains have been found on any of the numerous islands of the Bight visited during the past five years, though a seaworn and broken skull was found on the beach of D'Estree Bay, Kangaroo Island, in March, 1925. The animal still lives on the Casuarina Islands (a proclaimed sanctuary), whence the last cargo of pelts was taken in 1912.

Arctocephalus forsteri frequented the coasts of New Zealand and its sub-antarctic islands, and has many times been reported as a member of the Australian fauna, probably being confused with *A. doriferus*. Of its recent status in New Zealand we have the pleasing assurance of Waite (36) that its numbers have increased, "and if poaching, which undoubtedly takes place, can be stopped, there is no reason why the animal should not again people its old haunts."

[The peculiar word "Klapmatch," applied to female seals, is evidently derived from "Klapmyd," the Danish name of the Hooded or Bladder-nosed Seal (*Cystophora cristata*). The word "Wig" is the technical name for the coarse hair on the shoulders of a full-grown male fur-seal, hence for the seal itself.—Editor.]